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**Datasheet for the decision
of 9 September 2009**

Case Number: T 1144/07 - 3.2.06

Application Number: 97122316.9

Publication Number: 0849381

IPC: D01G 1/00

Language of the proceedings: EN

Title of invention:

Improved chopper for cutting fiber continuously, and method

Patentee:

Johns Manville International, Inc.

Opponent:

SAINT GOBAIN VETROTEX FRANCE SA

Headword:

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Relevant legal provisions:

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Relevant legal provisions (EPC 1973):

EPC Art. 56

Keyword:

"Inventive step - (yes)"

Decisions cited:

T 0642/94, T 0037/82, T 0294/89

Catchword:

-



Case Number: T 1144/07 - 3.2.06

D E C I S I O N
of the Technical Board of Appeal 3.2.06
of 9 September 2009

Appellant:
(Opponent)

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Respondent:
(Patent Proprietor)

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Decision under appeal:

Interlocutory decision of the Opposition
Division of the European Patent Office posted
21 May 2007 concerning maintenance of European
patent No. 0849381 in amended form.

Composition of the Board:

Chairman: P. Alting Van Geusau
Members: M. Harrison
W. Sekretaruk

Summary of Facts and Submissions

I. Subsequent to remittal of the case back to the opposition division for further examination in accordance with the order in case T 1380/04, the opposition division issued an interlocutory decision dated 21 May 2007 according to which European patent number 0 849 381 in an amended form was found to meet the requirements of the European Patent Convention (EPC).

II. The appellant (opponent) filed an appeal against this decision and requested revocation of the patent.

The patent proprietor also filed an appeal against this decision (but later requested only dismissal of the appellant's appeal - see item VI below).

III. In its grounds of appeal dated 3 September 2007 and its further submission of 14 April 2008, the appellant made reference to the following prior art:

D1: US 4 327 620;

D10: FR 1 199 052;

D11: The Manufacturing Technology of Continuous Glass Fibres, Glass Science and Technology 6, 2nd revised edition, 1983, pages 192 to 201;

D21: US Re 27 918.

IV. In the proprietor's grounds of appeal dated 28 September 2007, reference was made *inter alia* to

D16: US 2 404 146.

V. A summons to oral proceedings was issued together with a communication in which the Board informed the parties of its provisional opinion, noting *inter alia* that with respect to the proprietor's first auxiliary request (corresponding to the text of the patent which the opposition division had found allowable in its interlocutory decision), the Board opined that the requirements of Article 123(2) EPC appeared to be fulfilled but that the subject-matter of claim 1 appeared to lack inventive step when starting from the prior art disclosed in Figure 1 of the patent and combining this with the teaching of D21.

VI. During the oral proceedings held before the Board on 9 September 2009, the proprietor requested maintenance of the patent in the amended form found allowable by the opposition division in its interlocutory decision, as a result of which the proprietor was no longer disadvantaged by the decision under appeal. The proprietor's appeal was thus deemed withdrawn and consequently the proprietor became a respondent requesting only the dismissal of the appellant's appeal.

The appellant confirmed its request for revocation of the patent. In respect of the amended form of the patent found allowable by the opposition division, the appellant dropped its objection based on Article 123(2) EPC.

VII. Claims 1 and 11, the only two independent claims, read as follows:

"1. A chopper apparatus for chopping glass fiber strands into short lengths comprising a three

dimensional frame (50) having three or more sides, a chopper assembly connected to said frame including a blade roll (40) and a backup roll (36) being located adjacent one side of the frame and further comprising a drive or drives (99), characterised in that a second chopper assembly comprising a second blade roll (40A) and a second backup roll (36A) and further comprising a second drive or drives (99A) is connected to said frame (50) located adjacent another side of said frame; said frame (50) being rotatable to move said first chopper assembly out of an operating position and into a non-operating position while moving said second chopper assembly out of a non-operating position and into said operating position.

11. A method of making chopped glass fiber by chopping glass fiber strands into short lengths using a chopper that must be shut down periodically for repair comprising the following steps:

- pulling strands of glass fiber into a first chopper assembly comprising a blade roll (40) and a backup roll (36), said chopper assembly being connected to a three-dimensional rotatable frame at one side thereof and further comprising a drive or drives (99);
- stopping the chopping;
- rotating said frame so as to move said first chopper assembly out of the operating position into a non-operating position while moving a second chopper assembly connected to said frame adjacent a second side thereof out of a non-operating position and into the operating position;
- starting chopping by feeding glass fiber strands into a nip between the backup roll (36A) and the blade roll (40A) of said second chopper assembly, said second

chopper assembly further comprising a second drive or drives (99A)."

VIII. The appellant's arguments may be summarised as follows:

The subject-matter of claim 1 lacked an inventive step when starting from the closest prior art as disclosed in Figure 1 of the opposed patent. The objective problem to be solved was to reduce down time when carrying out repairs. This was achieved merely by rotating the frame supporting a first chopper assembly into an inoperative position which caused a second chopper assembly to move into the operating position. This solution was however rendered obvious by the teaching in D21. Although the claim also defined a "drive or drives" for each chopper assembly, a "drive" could refer to e.g. drive gearings or clutches as in D21, or other drive parts, which provided a drive input upstream of an output shaft. The use of a separate drive for the second chopper assembly, even if such were understood to be a drive unit or motor, would however add nothing inventive to the subject-matter resulting from a combination of the teaching of D21 applied to the closest prior art. This was because whilst D21 used one large main drive motor, it was evident that this was merely the result of deciding how much redundancy was required compared to the cost of providing it. Also, D21 was from 1974 when such drive motors were expensive, so that using one separate motor for each slitting apparatus in D21 would have been obvious in 1996, the effective filing date of the patent, since at that later date the cost of such motors had already been greatly reduced. This was also clear from D21, column 5, lines 40 to 45, where it was

stated that cost was reduced by using only one drive unit. The fact that the same passage also stated that the drive unit "need only be of a sufficient size to power one slitter head" did not alter the clear teaching that a cost advantage was achieved by use of one drive unit instead of more. It was thus obvious for a skilled person that where cost was less important, which was the case objectively in 1996 due to the reduced costs of motors, more motors would be used wherever suitable. Sufficient space was also available in the D21 arrangement to add such a separate motor for each cutting assembly. The use of several motors instead of one merely followed the well-known principle of providing more redundancy where desired but accepting the greater cost involved. It was also clear that more motors had to be provided in D21 to run the individual cutting apparatus units for testing when these were in their servicing stations.

Furthermore, the use of one drive for each chopper assembly was irrelevant to the solution of reducing down time, and should thus be ignored when considering inventive step, in accordance with e.g. T 37/82 and T 294/89. Such a drive was also not a part of the machine which was subject to the normal periodical repairs on chopper assemblies.

Should on the other hand the problem of safety be considered in relation to the use of several drives, as mentioned in the patent, it should be recognised that no safety advantages were provided by the claimed features, unless additional measures were used. The problem to be solved was therefore not to increase safety. Anyway, D21 did consider safety requirements as

a matter of course, since the slitting assembly to be serviced was moved into a non-operating position where it could not engage with the clutch. The use of two motors, if this were regarded as being safer for some reason, would just be another obvious alternative.

The use of two motors was also known from D10 or D11 as a means of reducing down time, whereby D10 and D11 related to machinery in the glass fibre manufacturing process thereby demonstrating that such dual drive systems were well known to the skilled person in this technical field.

The subject-matter of independent method claim 11 lacked an inventive step for essentially the same reasons as applied to claim 1, it being noted however that the features which had been introduced into the granted independent method claim were only product features and thus should not be taken into account when assessing inventive step of the method.

IX. The respondent's (proprietor's) arguments may be summarised as follows:

The term "drive" was clear from the context of the claims and from the patent as a whole; it did not relate to a gearbox or other driven part such as the dog clutches on the slitter assemblies in D21.

If a skilled person started from the device shown in Figure 1 of the patent and was able to combine this with D21 to provide a solution involving frame rotation for positioning a second chopper in an operative position, the skilled person was still faced with an

additional problem to be solved which was to reduce down time further, namely due to the loss of time which occurred due to shifting a clutch between driving one chopper assembly to the other. The subject-matter of claim 1 was not obvious in light of D21, which was anyway a machine for a different purpose, because D21 taught only the use of a single central drive arranged in a central column, with auxiliary drives for testing purposes being fixedly arranged on the column. Claim 1 on the other hand was an arrangement where each chopper assembly with its own drive were movable together when the frame was rotated.

The passage at column 5, lines 40 to 45 of D21, did not relate the cost reduction only to use of one drive, but combined this cost reduction with a drive having a size sufficient to power one slitter head. The inference could thus not be drawn that this related to a redundancy/cost measure, even less so that any further drive, if present, should be mounted so as to rotate together with the frame rather than being fixedly mounted.

The problem of safety also arose in a device with two chopper assemblies if only a single drive served both assemblies, since this would necessitate clutches connected to the single drive for operating the first and second chopper assemblies, which itself was a source of safety concern, whereas in claim 1 the chopper assembly was moved to a non-operating position in which the whole drive, and thus all driving parts for one chopper assembly would be rendered inoperative.

D16 only disclosed a single drive, whereby a drive belt had to be swapped between driven units when the mounting for these driven units was rotated thereby moving one driven unit out of an operating position and the other one into an operating position. There was no teaching of separate drives.

D10 and D11 related to replacing full bobbins by empty ones and thus the teaching in these documents was remote from the use of chopper assemblies and the problems associated with down time losses due to wear on such tooling.

Reasons for the Decision

1. *Amendments*

Compared to the claims already found to meet the requirements of Article 123(2) EPC and Article 84 EPC 1973 by the Board in case T 1380/04, claim 1 has been amended to define that the (first) chopper assembly "further compris(es) a drive or drives", and that the second chopper assembly "further compris(es) a second drive or drives". Claim 11 has also been amended correspondingly compared to that considered in case T 1380/04.

These amendments are based on the application as originally filed (see the published version of the filed application in column 3, lines 3 to 5 and lines 38 and 39, and column 11, lines 38 to 48).

No objection was maintained by the appellant against these amendments under Article 123(2) EPC nor Article 84 EPC 1973 and the Board finds no reason itself to object to the amendments. The requirements of Article 123(2) EPC and Article 84 EPC 1973 are therefore fulfilled.

2. *Inventive step*

2.1 First, the terminology "drive or drives" as used in the claims is understood in the context of the patent to mean the same as a motorised unit or a drive unit.

The appellant argued that a "drive" could also mean something which was itself driven, such as a dog clutch or a gearbox in the drive train each of which forms a drive for a driven output. However this would be contrary to the manner in which this terminology is used in the patent, where in e.g. paragraph [0053] a distinction is made between the drives 99 and 99A on one hand and drive belts 100 and 100A which are driven by the drives 99 and 99A, and which in turn drive the blade rolls 40 and 40A.

2.2 For consideration of inventive step, the parties and the Board agree that the chopper assembly in Figure 1 of the patent, which is disclosed as prior art, forms the closest prior art starting point.

2.3 Compared to this prior art, which has a single chopper assembly on a fixed frame, the subject-matter of claim 1 differs by the features of the characterizing portion.

Starting from the closest prior art, the objective problem to be solved by the provision of a second chopper assembly on a rotatable frame is to reduce the down time which results when performing repairs or alterations to the tooling. This problem is addressed in D21 (see e.g. column 1, lines 42 to 53) and the skilled person would therefore consult this document to find a solution, in particular because it relates to an apparatus where material to be cut (in this case, metallic sheets) is fed between two driven opposed rotating elements.

2.4 One solution taught in D21 is to arrange separate cutting units (each being a slitter apparatus) on different sides of a cross-shaped rotatable frame or turntable, whereby a slitter apparatus in an operative position moves to an inoperative position while another slitter apparatus in an inoperative position moves to an operative position by rotating the frame around a central column 57 (see e.g. Fig. 2 and column 2, lines 63 to column 3, line 1). Such an arrangement of tooling units on a rotating turntable is also disclosed in the patent (see paragraph [0080]).

2.5 When the teaching of D21 is combined with the closest prior art of Figure 1 however, a further difference compared to claim 1 is still present. Claim 1 namely defines that the second chopper assembly further comprises "a second drive or drives", which is/are thus distinct from the drive or drives used for the first chopper assembly, and wherein the second chopper assembly (and thus also its second drive or drives comprised therein) "is connected to", and thus movable with, the rotatable frame. In D21, whilst "small

hydraulic motors 130" are provided for testing purposes for each slitter apparatus, these motors are located fixedly to the column 57 (see column 4, lines 3 to 12). Since D21 refers to these as "small" and for "test purposes", this implies that these motors are not strong enough to carry out the intended cutting operation. Likewise, although D21 states in the same section that "in the preferred embodiment, the test motors 130 are fixed in position on column 57, but other arrangements could be utilized", it cannot be concluded that such "other arrangements" suggest an arrangement whereby the motors would be fixed to the turntable instead.

2.6 This further difference is alleged by the proprietor as solving an additional problem with down time losses occurring due to the time taken for engagement and disengagement of a clutch, albeit that this time may be relatively short compared to other change-over operations. However, and in agreement with the appellant, the Board finds that this problem is not objective, since the mere provision of a second drive does not imply a time saving compared to operating a clutch such as the dog clutch (100 and 124) in D21, because it is left open what steps are required to put such a second drive into operation.

2.7 The appellant argued that the provision of a drive for the second chopper assembly was the result of providing increased redundancy and that such a solution was taught by D21, in particular from column 5, lines 41 to 45, which linked the cost saving achieved to the presence of a single drive unit.

Put in other words, the further objective problem to be solved by the provision of a drive for the second assembly is to provide increased redundancy. However, the Board finds that the provision of a further (second) drive or drives when starting from the apparatus shown in Figure 1 of the patent and considering the application of the arrangement in D21 thereto is not an obvious solution for increasing redundancy when taking into account the disclosure in D21 column 5, lines 40 to 45. This section of D21 does not clearly link the use of a single drive unit, by itself, to the reduction in cost which is stated to have been achieved, but instead only discloses the cost reduction as a result of the use of one drive unit "which need only be of a size sufficient to power one slitter head". The Board finds that this statement cannot unambiguously be understood as referring to the cost reduction which may be achieved merely by the use of one drive unit, since the arrangement of the drive unit in Figure 2 (see also column 3, lines 57 to 60) includes a speed reducer 116, whereby such a speed reducer 116 would normally increase the torque at the output gear 120 thus allowing the motor to be reduced in size while still allowing it to perform the cutting operation. The combination of these two components, and indeed the resulting length of the combination thereof, cannot therefore be ignored in the context of providing one drive unit which is of a "size sufficient to power" one slitter head. It can therefore, due to the somewhat ambiguous wording of this passage in D21, only be regarded as speculative to conclude that the use of one drive unit reduces cost compared to one drive unit for each slitter assembly. The increased torque produced by the speed reducer might even imply that the speed

reducer is an alternative to using more than one motor for supplying the necessary power to drive individual shafts, or even individual sections of the same shaft, of one slitter assembly.

Taking the arrangement as shown in e.g. Figure 2 of D21, and contrary to the argument of the appellant, there appears to be insufficient space to mount a further drive unit to provide increased redundancy and, even if there were, the claim implicitly requires that the second drive should be rotatable with the (chopper) assembly rather than being fixed to a stationary column as in D21. Only an entire re-design of the system of D21 (when combining this with Figure 1 of the patent) would allow a skilled person to arrive at the subject-matter of claim 1, and the Board concludes that such a re-design would only be performed with hindsight of the invention.

Whilst the appellant also argued that drive units had become far cheaper since D21 was published and that the use of several motors instead of one would thus have been an obvious possibility at the effective date of filing of the patent, the Board finds that merely the existence of cheaper motors at that date compared to the date of D21 does not overcome the design considerations made in the system of D21 leading to the use of the single drive unit, such that the provision of increased redundancy would still not lead the skilled person to arrive at the subject-matter of claim 1 unless an inventive step were involved.

2.8 In paragraph [0081] of the patent, it is stated that safety considerations resulted in a preference for two

separate drives, as compared to using a single drive with two clutches engageable one at a time. The Board thus finds it appropriate to consider whether a skilled person in the light of a problem of providing improved safety would use a first and a second drive for respective first and second cutting assemblies in D21 and thus arrive at the invention defined in claim 1 by combining this teaching with the closest prior art disclosed in Figure 1 of the patent.

The appellant argued that a problem of improved safety in relation to the use of one drive for each (cutting) assembly compared to the use of one drive was not objective, since the provision of any increased safety was dependent on how the drives were arranged.

Without deciding whether such a problem is indeed objective, the Board however concludes that, even if this were an objective problem, the arrangement of D21, which has its own safety system inherently by the rotation of a cutting head out of any possible engagement with the dog drive 124, would provide no incentive for a skilled person to solve the problem by use of a further drive for another cutting assembly. Whilst the appellant argued that, if this were an objective problem, the use of one drive for each cutting assembly would just be an obvious alternative for providing improved safety, this is an allegation unsupported by any prior art.

- 2.9 D16 also does not teach a solution using two drives to provide redundancy or to provide increased safety in a cutting machine. Instead, D16 provides (see e.g. Figures 1 to 3 and column 4, lines 10 to 27) a single

drive 43 that drives one of two sets of drive gears 42 for performing a particular slotting operation, whereby a drive belt is alternately placed around the appropriate pulley on a respective driven shaft in housings 37.

2.10 D10 and D11 were also cited by the appellant as providing a teaching for a skilled person to alternately use a first or second drive to perform a manufacturing operation in the glass fibre manufacturing industry and which would then be applied without inventive skill to the device of Figure 1 of the patent. However, whilst each of these documents indeed shows (see e.g. D10, page 2, left column, lines 27 to 31 or and D11 section V.6.1.4) bobbins or winders each of which has its own drive and which are moved from an inoperative position in which they are idle to an operative position in which they are driven, the drives are used to drive bobbins, whereby the swapping of one bobbin for another when one is full is found by the Board to be remote from the problem of reducing down time during repair of a cutting machine or providing redundancy in such a cutting machine. Likewise neither D10 nor D11 suggests a solution of using more than one drive for the purpose of providing improved safety, let alone in the context of any cutting machinery. Further, the mere fact that D10 and D11 relate to machinery also used in glass fibre manufacture is not found to provide an incentive to the skilled person to solve problems related to the problems involved with cutting machinery.

2.11 The appellant also argued that the use of more than one drive was a feature unrelated to the problem of

providing reduced downtime and should thus be ignored when considering inventive step. Decisions T 37/82 and T 294/89 were cited in support of its argument. However the Board finds that features of a claim which do not solve the same problem arising from a previous request (i.e. a problem present with respect to a previous combination of features) cannot simply be ignored for the purposes of considering inventive step where their inclusion in a claim either alters the problem to be solved or relates to a further problem to be solved, as is the case here. The cited decisions therefore do not alter this finding.

2.12 The subject-matter of claim 1 is therefore found to involve an inventive step in respect of the cited prior art.

2.13 Independent claim 11 does not include a specific reference to claim 1. However, it defines a method of making chopped fibre comprising steps which necessarily include use of an apparatus having, either by explicit definition or implicitly, all the features of claim 1. The inclusion of all the features of the product claim 1 was also not a matter disputed by the appellant. Since the subject-matter of claim 1 is found to involve an inventive step, and since its subject-matter is included within claim 11, the subject-matter of claim 11 therefore also involves an inventive step.

The appellant argued that apparatus features should not be considered when assessing inventive step of a method claim. The Board however finds this argument unconvincing because the method steps in the subject-matter of claim 11 do not stand alone but instead

require use of the apparatus, so that such apparatus features cannot therefore be ignored. In arriving at the subject-matter of method claim 11, the skilled person must *de facto* use inventive skill if subject-matter is to be arrived at which includes subject-matter which has already been found to involve an inventive step (i.e. that in claim 1). This approach is also in accordance with established case law of the Boards of Appeal (see e.g. T 642/94, Reasons 4.9).

- 2.14 The Board thus finds no reason to differ from the conclusion reached by the opposition division, whereby the subject-matter of claim 1 and claim 11 involves an inventive step when considering the prior art cited in the appeal proceedings.

The requirement of Article 56 EPC 1973 is therefore fulfilled.

Order

For these reasons it is decided that:

The appeal of the opponent is dismissed.

The Registrar:

The Chairman:

A. Counillon

P. Alting van Geusau